Global Antimicrobial Resistance Surveillance System (GLASS) Report

Early implementation

2016-2017

World Health Organization

Global Antimicrobial Resistance Surveillance System (GLASS) Report

Early implementation 2016-17

World Health Organization

Global antimicrobial resistance surveillance system (GLASS) report: early implementation 2016-2017

ISBN 978-92-4-151344-9

Suggested citation. Global antimicrobial resistance surveillance system (GLASS) report: early implementation 2016-2017. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

Printed in France

Design and Layout: www.paprika-annecy.com

Content

SUMMARY

Antimicrobial resistance (AMR) is a critical public health issue globally. If we are to preserve human and animal health, policy interventions and global collaboration are vital to improve our understanding of AMR dynamics and to inform containment and mitigation strategies.

On 22 October 2015 WHO launched the Global Antimicrobial Resistance Surveillance System (GLASS), the first global collaborative effort to standardise AMR surveillance. GLASS supports the strategic objective of WHO's Global Action Plan on AMR (GAP-AMR) to strengthen the AMR evidence base. GLASS provides a standardised approach to the collection, analysis, and sharing of AMR data by countries, and seeks to document the status of existing or newly developed national AMR surveillance systems. GLASS is supported by WHO Collaborating Centres, involving strong commitment from participating countries and close collaborations with AMR regional networks.

In addition to the collection of data, GLASS helps to foster and strengthen national AMR surveillance systems in order to ensure the production of reliable information. Furthermore, GLASS promotes a shift from surveillance approaches based solely on laboratory data (isolate-based data) to a system that includes epidemiological, clinical, and population-level data. This approach has been shown to increase the understanding of the impact of AMR on human health and to enable better analysis and prediction of AMR trends.

In its early implementation phase (2015-2019), GLASS aims to combine data on the status of enrolled countries' AMR surveillance systems with AMR data for selected bacteria that cause infections in humans: *Acinetobacter* spp., *Escherichia coli*, *Klebsiella pneumoniae*, *Neisseria gonorrhoeae*, *Salmonella* spp., *Shigella* spp., *Staphylococcus aureus*, and *Streptococcus pneumoniae*. AMR data are collected through a case-finding surveillance system, which collates results of priority specimens from blood, urine, stool, as well as cervical and urethral specimens, that have been sent routinely to laboratories for clinical purposes. Population data are also collected, including the overall number of patients tested per specific specimen, and variables such as age, gender, and infection origin. The latter is used as proxy to define where the infection has been contracted (hospital versus community).

By the end of the first GLASS data call on 8 July 2017, 42 countries enrolled in GLASS, of which 40 countries provided information on their AMR surveillance systems, and 22 provided 2016 AMR data. The aim of this report is to document participation efforts and outcomes across enrolled countries, and highlight differences and constraints identified to date. The first GLASS data call involved a substantial amount of work for participating countries, particularly for those that had not yet shared AMR data with international systems. Challenges countries faced in reporting data have been taken into consideration in the analysis – for example, included data vary considerably in terms of quality and completeness, so no attempt has been made to compare AMR status at a regional or country level. However, these data enable us to better understand surveillance capacities and mechanisms of reporting across countries, and will enable us to refine GLASS methodology going forward. This work represents a first attempt to report official national AMR data for key pathogens to a global system using standardised surveillance methodology.

GLASS supports the development of three essential core components for national AMR surveillance: a National Coordination Centre (NCC), a National Reference Laboratory (NRL), and sentinel surveillance sites where both diagnostic results and epidemiological data are collected. The core components are linked together by a constant flow of data and information exchange, and work together to building an effective network for detection and monitoring AMR in clinical samples. Based on the information submitted in this data call, almost all countries that have enrolled in GLASS have in place, or are working to establish, a system that includes these three core components. National AMR surveillance plans have been introduced in most of the enrolled countries enrolled in GLASS, and surveillance National Focal Points (NFPs) have been identified in all countries, working closely with the GLASS Secretariat alongside WHO Regional Offices, Country Offices, and regional networks. AMR surveillance sites (reporting to national surveillance systems) currently vary by country in terms of number of facilities and type of facility (hospital versus outpatient clinics). Although not all surveillance sites are yet reporting to GLASS, a structure is in place to ensure that they will be incorporated into future data calls. Almost all surveillance sites are supported by local clinical laboratories performing antimicrobial susceptibility testing (AST) according to internationally recognised standards (either European Committee on Antimicrobial Susceptibility Testing (EUCAST), the Clinical and Laboratory Standards Institute (CLSI), or other recognised protocols). In most

countries currently reporting AMR data to GLASS, AST and bacterial identification are quality controlled, with external quality assurance (EQA) provided to local clinical laboratories by national AMR surveillance programmes. Moreover, most NRLs, whose role is to coordinate and support diagnostic providers at the surveillance sites, participate in international EQA schemes.

In this data call, countries provided AMR data primarily for pathogens isolated from blood specimens, followed by urine, stool, cervical and urethral ones. The total number of isolates with submitted AST results varied considerably, from a minimum of 72 isolates per country to a maximum of 167,331 (for countries combined total of 507,746 isolates). Only one country[1] submitted data on all selected pathogens. The most frequently reported were resistance patterns for *E. coli*, *K. pneumoniae*, *S. aureus*, and *S. pneumoniae* (17 countries among the 22 countries reporting AMR rates), followed by resistance patterns for *Salmonella* spp. (15 countries). AST results for *N. gonorrhoeae* and *Shigella* spp. were compiled by 11 and eight countries, respectively. AST data submission for GLASS involves 12 antimicrobial classes, with 73% of countries providing results for more than half of the antibiotics requested. Five countries[2] also submitted data on the total sampled population (see 2.2.3 for the description of GLASS methodology and approach), enabling the incidence of occurrence of resistance within tested populations to be calculated and, in some cases, stratified for gender, age, and infection origin.

GLASS is now working towards the integration of surveillance initiatives for AMR in bacterial pathogens. In this report we highlight a series of modules now being created to facilitate this integration. These include modules on antimicrobial consumption (AMC), the enhanced Gonococcal Antimicrobial Surveillance Programme, and AMR in the food chain. These surveillance modules will be added to the GLASS IT platform to allow the collection, analysis, and reporting of diverse cross-sectoral AMR data into a single repository.

Despite the limitations and constraints encountered during the first GLASS data call, the information included in this report represents a first step towards improving our understanding of the epidemiology and impact of AMR globally. Some countries still face huge challenges to building their national surveillance systems and improvements are still urgently needed. A global system such as GLASS can succeed only through continued data sharing as well as global collaboration, harmonisation, and coordination between all partners involved in the implementation of AMR surveillance.